



echo

elemental architecture as a
method of cleansing freshwater
in the wake of industrialization



As humans first began to build and settle, nature was a determining factor in the course of our lives. We regarded forces of nature as gods - something to be feared, coveted, and relied upon for food, safety, and survival. Regardless of weather conditions or terrain, there has always been a constant element we have followed and pursued: the presence of water.



In the face of continual changes, we looked to water as a something steadfast. Societies settled near rivers, lakes, and shorelines out of necessity to sustain their lifestyles. Early tribes recognized the significance of the elements in their lives and regarded them as gods among men.



Out of respect to their gods, indigenous Ojibwe tribes participated in the Rain Dance Ceremony. Through song and dance, fasting, and bodily sacrifice, they ensured that the coming year would bring enough rain to sustain themselves and their crops.



On a cliff-side overlooking the Aegean Sea stands the ruins of the Temple of Poseidon. The temple overlooks a bay that saw the arrival and departure of battleships, marking a monument fitting to the god who determined of the mood of the waters. This temple represents the beliefs and stories that the fabric of Ancient Greece is built upon.



Within a sacred crypt in Chartres, France resides the Well of Strong Saints. A legend told of “Our Lady Under Ground” – a Madonna whom early generations of Christian pilgrims congregated to worship at the well. From this well they also drew water for ritual use: baptisms and medicinal cures.



The presence of sacred waters helped shape this cathedral in more than just a physical way – the well became a symbol of spiritual and cultural preservation, framed by the cathedral standing above it. However, years of decay and being shrouded by the stone foundation had left the well and the waters a shadow of the spiritual destination it had once been.



As we welcomed the Industrial Revolution, rapid production of steel and glass spurred us to manipulate our built environment through machines and mass production. The flourishing of industry turned into the wilting of water quality as toxins were churned out into our lakes and rivers. Blinded by the allure of new technology, we began to disregard the health of our resources.



Martin Heidegger explains an equilibrium between man and nature through his concept of the Fourfold. Our role as Mortals in the fourfold is to recognize our temporary nature as humans and be aware of how our actions influence the Earth, Sky, and Divinities, even beyond our own lifetimes.



The Bank of America Tower

LEED Platinum

Sustainability has become a title to be flaunted and the newest technology to be showcased rather than a measure of the building's longevity and contribution to environmental health.



The canal system in Hamburg, Germany serves as an example of this reciprocal relationship: man and nature thrive when working in tandem rather than one attempting to overpower the other.



“It is our responsibility as humans to direct our attention away from ourselves back in the direction of the vast, balance-sustaining rhythm of the natural order.”

-Hans Georg Gadamer

bio - life
mimesis - imitate

Nature's ability to perform a task in the most efficient and elegant way offers itself as potential for not just more sustainable architecture, but architecture that speaks a language users understand.



Thermal Vals

Peter Zumthor

Between the stone palette and the underground entrances, this bathhouse embodies graceful integration into a site. This architecture acts not just as a room to be filled, but a careful consideration and extension of its surroundings.



“friede” - preserved from harm

To free something is to save it. Biomimicry attempts to remedy the damage done not by further mastering of the earth, but by allowing the solutions nature has already found to come forth within a design – the freeing of nature’s essence.





History has taught us that water is the lifeblood of humanity. Gaston Bachelard explains how water can be a source of private contemplation by allowing us to see our reflections and by engaging our senses. But it goes beyond being an individual experience: bodies of water create universal interactions by uniting communities, providing a meeting point, and indicating a place of settling.

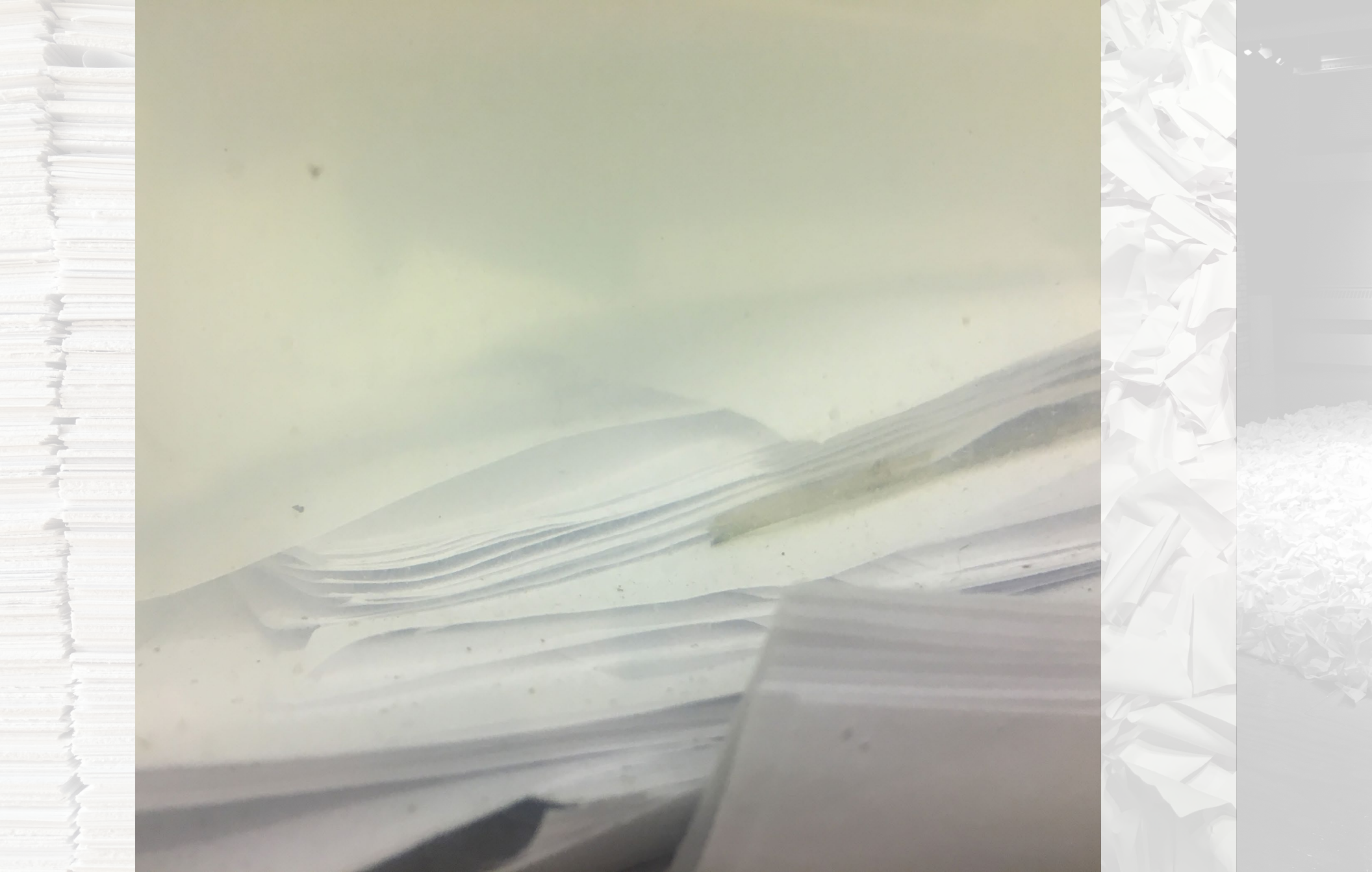


Although the surface of our earth is 70% water, merely 2.5% of this is freshwater. Less than half of that is accessible for purifying, consuming, and carrying out daily rituals in which we have all become accustomed. We need architecture that refuses to further contribute needless waste into a resource that we cannot replace.



In the face of industry-dependent cities, we must turn to natural systems and site-specific architecture to remedy the damage done to our limited reserves of freshwater.











Preindustrial Duluth originally belonged primarily to bands of Ojibwe tribes. Lake Superior became the biggest draw to the area, acting as a direct connection between ocean ports as well as being an essential source of freshwater. Being one of the world's largest freshwater lakes, the ecosystem of Lake Superior is unique and susceptible to changes happening around it.

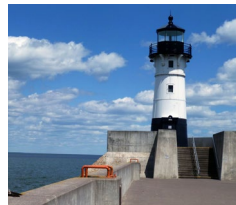
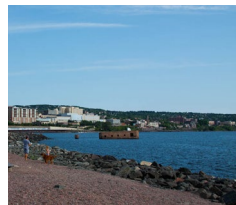


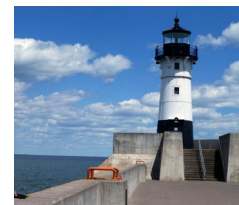
As Duluth was founded and flourished upon consumption of resources and geographic connections, the path was laid for rapid industrialization. Man quickly took the upper hand in the balance compared to how long nature had control. Like countless other shoreline cities, the price of industrialization came at the expense of our freshwater's health.

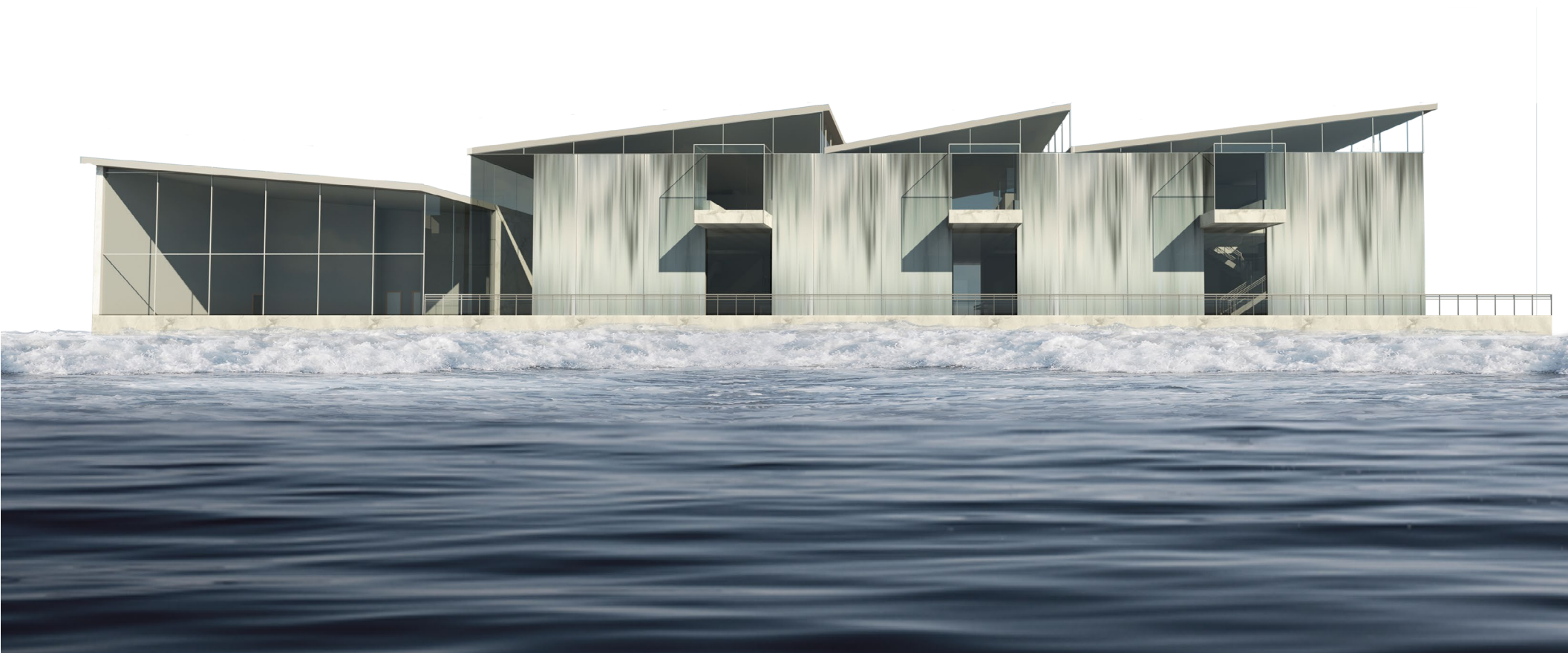


Lake Superior's water quality is a clear example of the reciprocal relationship between us and our surroundings. As water quality deteriorates so does our quality of life, and vice versa. The program of this thesis lies in the creation of a freshwater research and conservation center in Duluth, MN. The general public is encouraged to become involved in environmental conservation efforts while research and laboratory spaces exist to further the development of purification systems to counteract the effects of toxins being emitted into freshwater bodies.







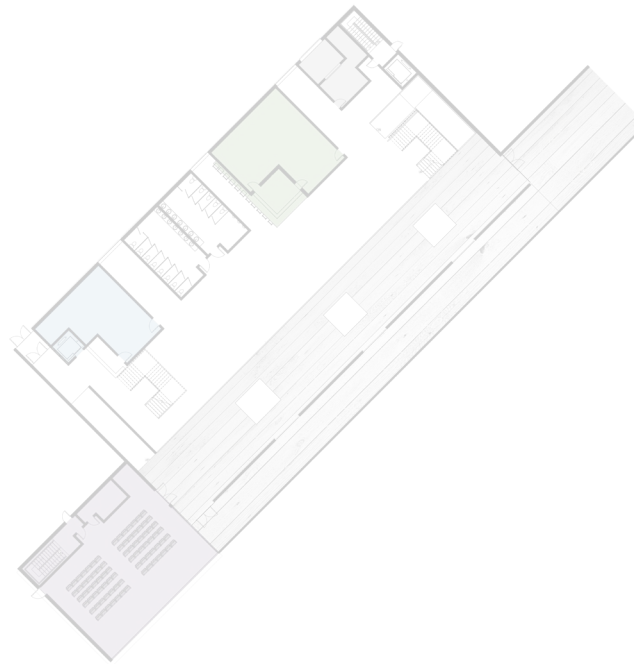




Cleansing

Lower Level

- laboratories
- private offices & conference space
- lab storage
- mechanical



Community & Interaction

Ground Level

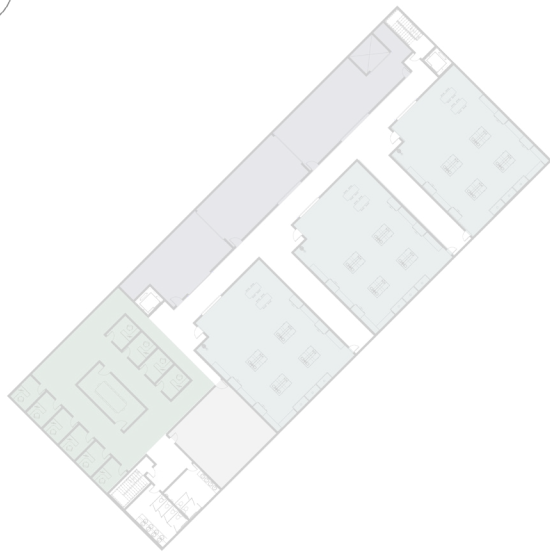
- auditorium
- reception & administration
- cafe
- mechanical
- lakewalk



Introspection

Upper Level

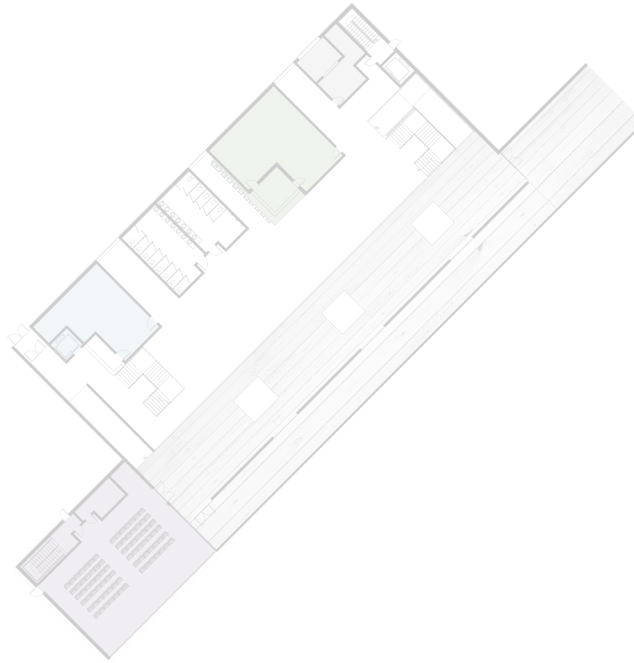
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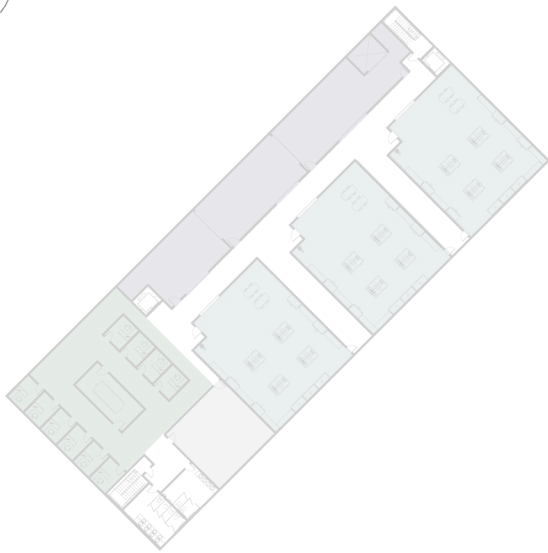
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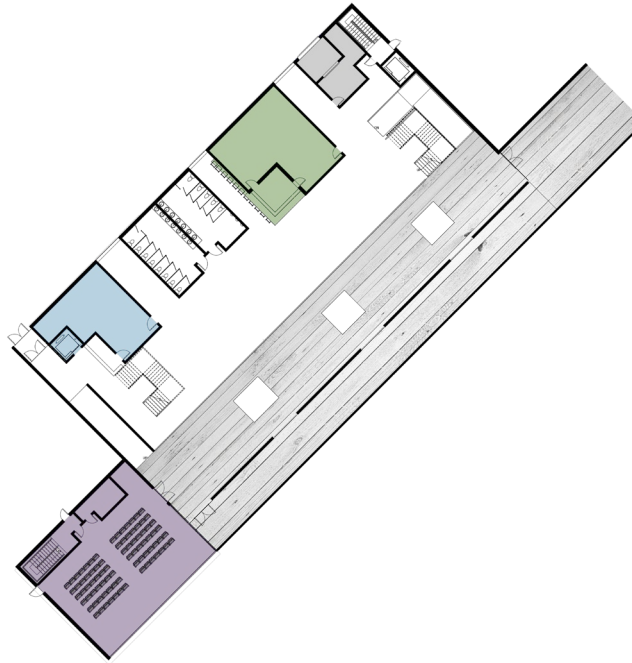
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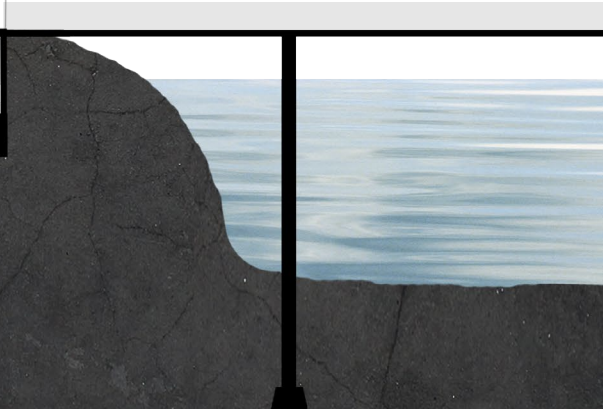
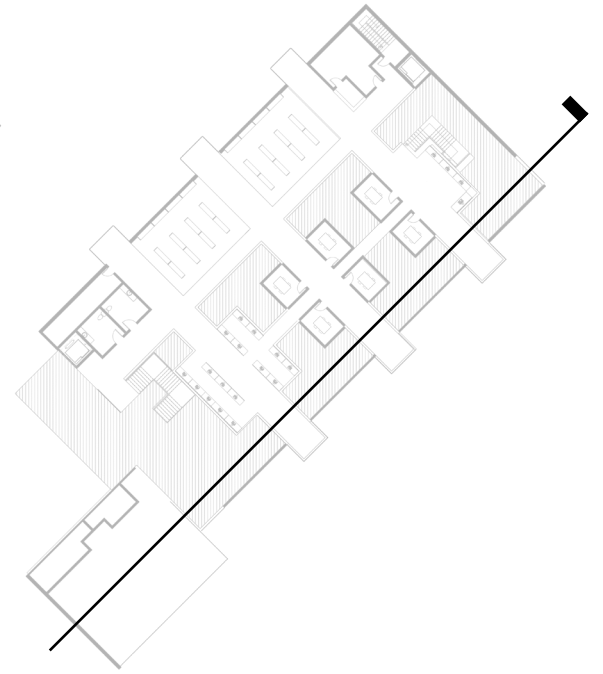
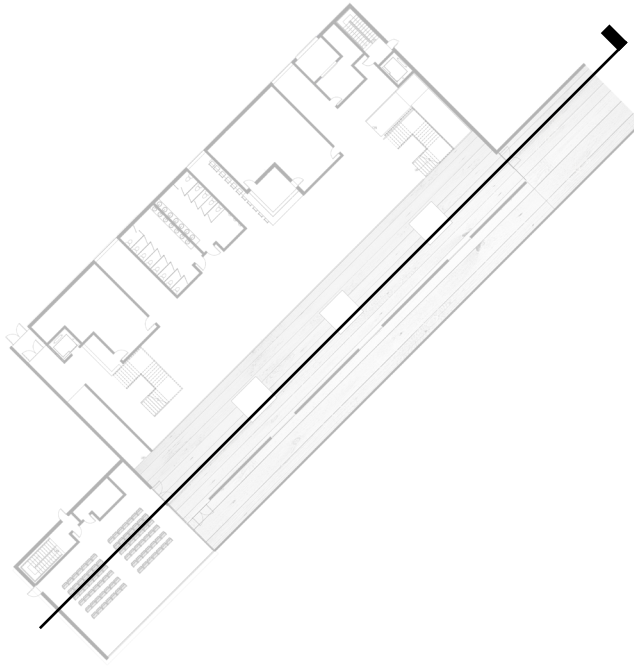
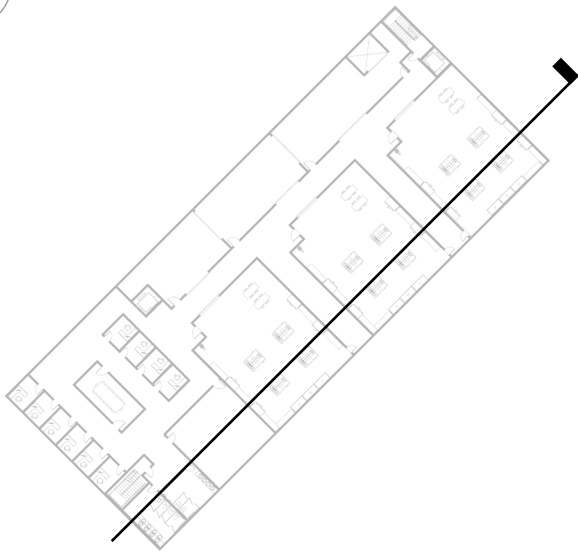
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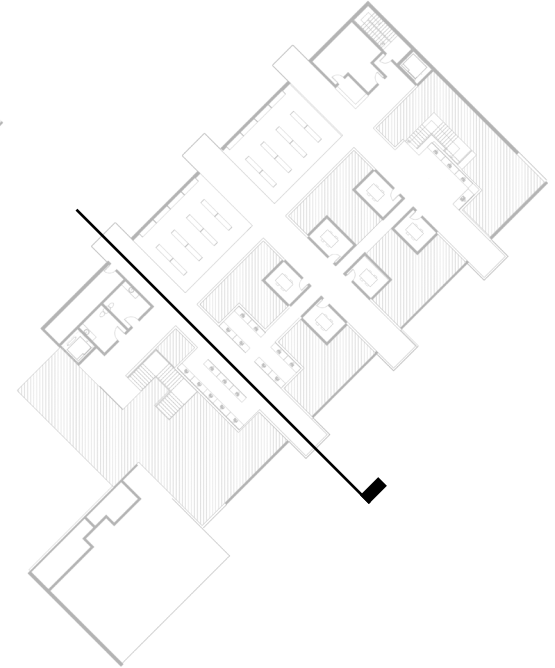
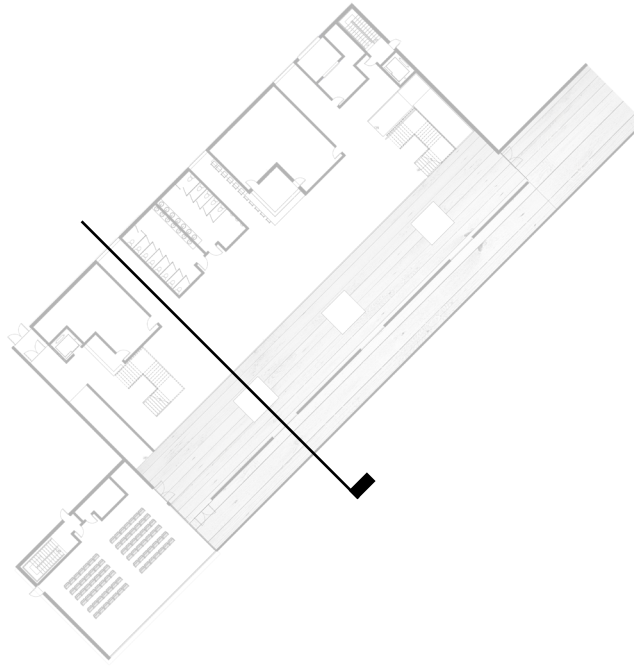
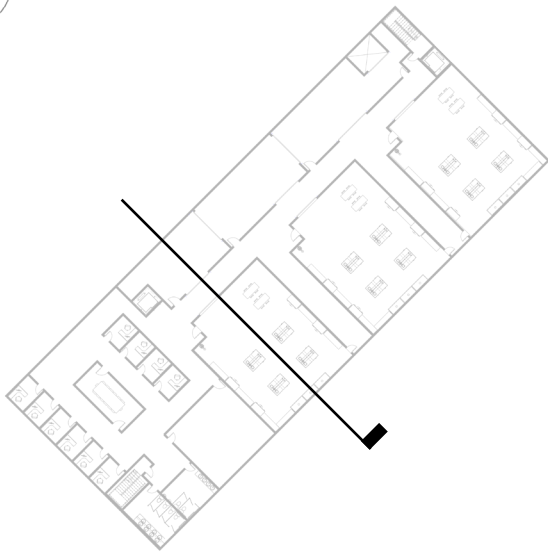


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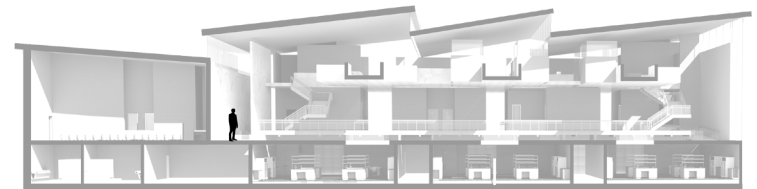




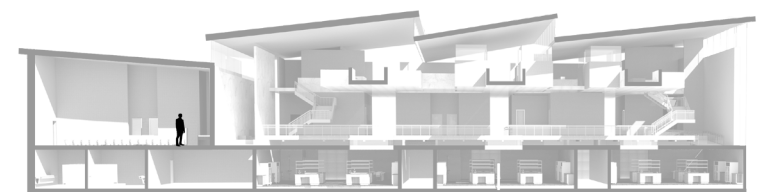


Living Machine

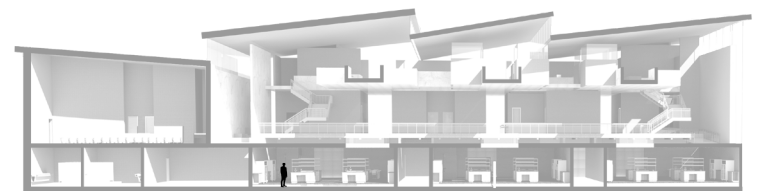




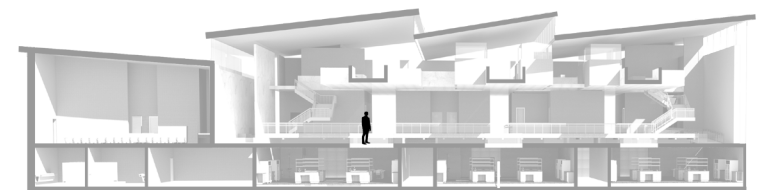
Entry



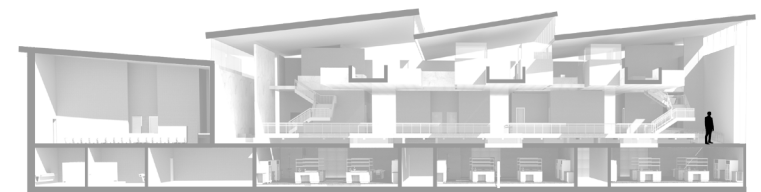
Auditorium



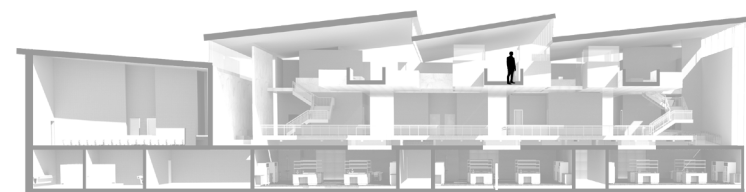
Laboratory



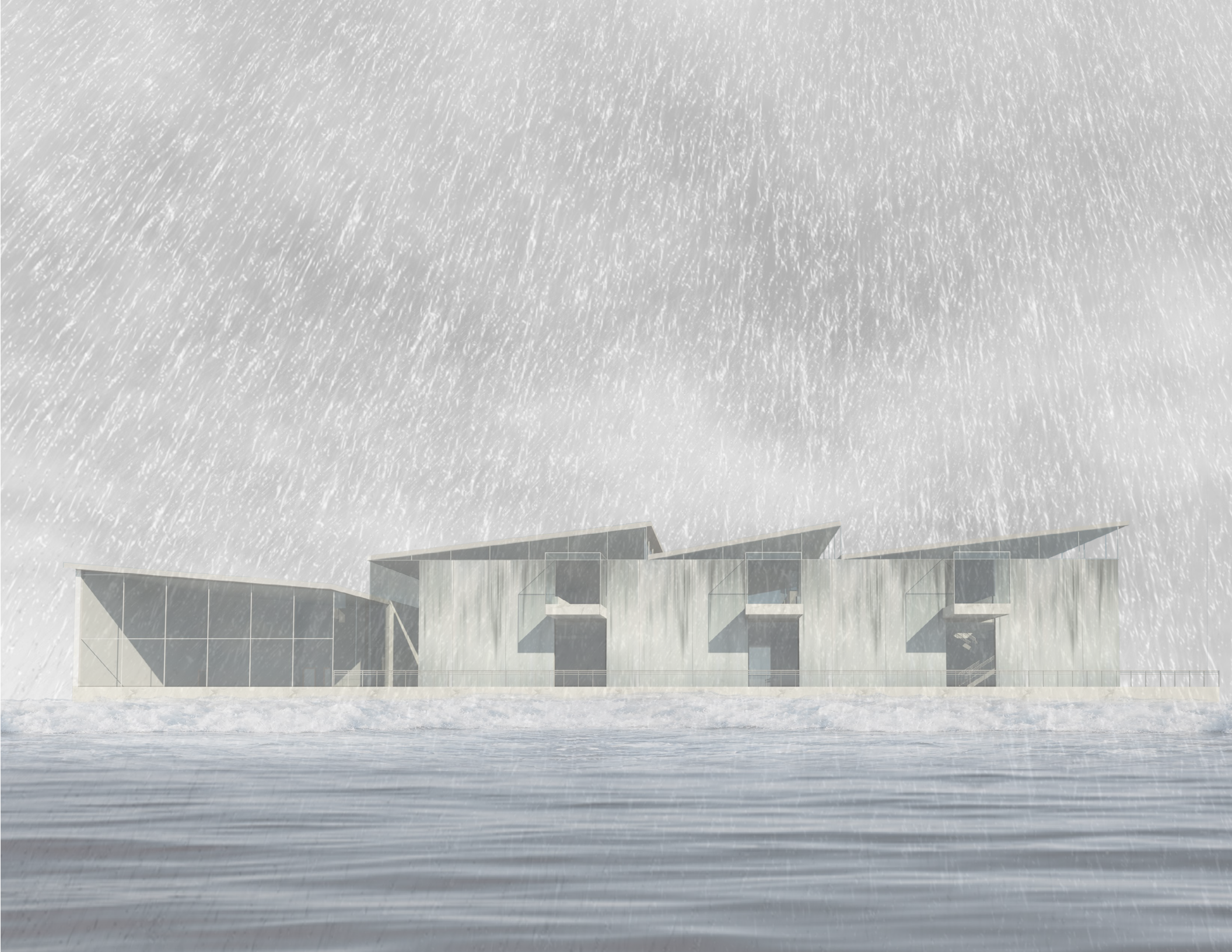
Reflection



Path



Introspection





Questions & Comments